

**SELF ASSEMBLED THREE-DIMENSIONAL PHOTONIC
CRYSTAL**

ABSTRACT OF THE DISCLOSURE

A method of making a photonic crystal
5 includes obtaining single spheres for use in making a self assembled opal structure. Spherical particles are placed centrifuge and separated from doublets using a relative difference in sedimentation velocity in response to centrifugal force. A method includes
10 drawing a substrate through a meniscus at a declination to uniformly deposit spheres on the substrate. Three-dimensional photonic crystals including buried waveguides are also provided.